

# **Racial Disparities in Use of Force Against Incarcerated People**

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## **Research Summary**

While many studies have examined racial disparities in police use of force, it is unknown whether or how use of force in a correctional setting varies by race. Therefore, this study examines 500 incidents that occurred at an all-male, maximum security prison in order to test for racial differences in use of force, net of situational characteristics such as the incarcerated person's behavior. The results of binary logistic regression models show that physical force was used more often against non-Whites, while pinion restraints were used more often against White people than Black people. The use of chemical irritant and cell extractions, as well as a combined measure of total use of force, did not vary by race. Furthermore, race moderated the effects of some situational characteristics on total use of force; racial disparities may be the result of unconscious bias that shapes correctional officers' reactions to incidents involving incarcerated people of color.

## **Introduction**

While use of force by criminal justice agents has long been an important area of research for criminologists, recent events have brought an additional focus to this topic. Importantly, many studies have examined the impact of a citizen's race on police decisions to use force, with some evidence that force is more likely among non-Whites, at least in some situations (Bolger, 2015; Engel & Calnon, 2004; Garner et al., 2002; Gau et al., 2009; Leinfelt, 2005; Morgan et al., 2020; Paoline & Terrill, 2004, 2007; Schuck, 2004; Shjarback & Nix, 2020; Smith et al., 2017; Terrill & Mastrofski, 2002; Terrill et al., 2003; Terrill et al., 2008), although other studies found no significant differences across racial groups (Lawton, 2007; McCluskey et al., 2005; McCluskey & Terrill, 2005; Sun & Payne, 2004; Worrall et al., 2020) and a systematic review concluded that the relationship between race and use of force is unclear due to mixed results (Hollis & Jennings, 2018). Other characteristics of citizens, officers, and the interaction itself have also been linked to the decision to use force (for a review, see Bolger, 2015; Smith et al., 2017). The recent focus on police use of force has extended to other parts of the criminal justice system; in particular, activists have expressed concern about use of force within correctional facilities, where it is believed there is less transparency.

Unlike policing, however, little is known about the use of force by correctional officers (CO). The existing work on the subject has mainly focused on attitudes toward use of force or reactions to hypothetical scenarios. This research suggests that aspects of a CO's job – such as quality of supervision, role ambiguity, job satisfaction – are important in developing attitudes toward use of force (Griffin 1999, 2002; Worley et al., 2019). Officer characteristics such as gender, age, rank, years of service, fear of victimization, and custodial philosophy are also related to support for use of force (Griffin, 1999, 2002; Hemmens & Stohr, 2001; Hogan et al., 2005; Jenne & Kersting, 1996; Tewksbury & Collins, 2006; Worley et al., 2019). Only a couple of studies

have examined how characteristics of incarcerated people or their interactions with staff could shape decisions to use force (e.g., Hogan et al., 2005; McNeeley & Donley, 2021; Wolff et al., 2007).

To fill this gap in the literature, the current study explores the relationship between an incarcerated person's race and the use of different types of force, while controlling for other characteristics of incarcerated people and situations. In addition to examining racial differences in use of force, the study also explores whether race moderates the effects of situational characteristics on use of force. To test this, a sample of 500 incidents from a maximum-security prison in Minnesota is examined. The results provide important policy implications for maintaining order within correctional facilities while ensuring fair treatment of incarcerated people. Additionally, the study contributes to the broader criminal justice literature by examining whether biases in decision-making that emerge in other parts of the criminal justice system apply to the more formalized, controlled prison system.

### **Use of Force in Corrections**

The Minnesota Department of Corrections' (MnDOC) policy on use of force states that force and restraints can only be used when necessary in the following situations: (1) to protect the public; (2), in self-defense; (3) to defend or aid other staff, an incarcerated person, or a third party; (4) to prevent the commission of a crime – including riot and escape – or destruction of property; (5) to enforce facility regulations and maintain order; and (6) to prevent an incarcerated person from injuring themselves or others. Staff may only use the techniques instructed by the MnDOC and may only use equipment authorized for that purpose. Decisions about force are often made or approved by one's superiors. For example, the unit supervisor or watch commander must authorize cell extractions (i.e., the forcible removal of an incarcerated person from his cell) or the use of

pinion restraints (i.e., total body restraints such as a restraint board or chair) or chemical irritant, unless delay would result in bodily harm or death of staff or incarcerated people or the loss of control of an area.

There has been relatively little research on use of force within correctional settings. Early studies on CO use of force were descriptive in nature and focused on violence by prison guards. For example, Marquart (1986) studied the use of physical force as a means of informal social control within a Texas prison. He found that, in addition to formal measures such as rules and regulations resulting in disciplinary procedures, COs used verbal intimidation and physical coercion in order to maintain order. Different levels of physical coercion were observed, including “tuneups,” which were minor violent measures such as shoves, kicks, and slaps used to correct minor offenses; “ass whippings,” in which weapons were used in response to more serious rule-breaking; and severe beatings for incarcerated people who violated “sacred” rules by attacking staff, inciting strikes or riots, or attempting to escape. Marquart noted that the use of force was not directed toward particular individuals, but rather was widespread to maintain order in the facility and earn or maintain social status with other staff. As another example, Wolff et al. (2007) surveyed incarcerated people to learn the prevalence of staff-on-inmate physical victimization. Rates of victimization were significantly greater among incarcerated males (246 per 1,000) than among incarcerated females (83 per 1,000). Staff-on-inmate victimization rates also varied by facility size, with higher rates found in medium-sized (populations over 1,000) or large facilities (populations over 1,901). In addition, these incidents often involved the threat of or use of a weapon by staff.

Other studies have measured officers’ attitudes toward the use of force (e.g., Griffin, 1999; Griffin, 2002; Hemmens & Stohr, 2001; Worley et al., 2019) or their reactions to hypothetical

scenarios (e.g., Hogan et al., 2005; Jenne & Kersting, 1996; Tewksbury & Collins, 2006), showing officer characteristics such as gender, age, rank, and years of service are related to support for use of force. A study of Kentucky prison guards found aggressive reactions to hypothetical encounters with incarcerated people were lower among those with higher rank and those with minor children, but higher among taller respondents (Tewksbury & Collins, 2006). Importantly, there were no differences in men's and women's responses. In contrast, Jenne & Kersting (1996) found female officers in a northeastern state responded more aggressively to some, but not all, hypothetical scenarios than male officers did. Hemmens & Stohr (2001) conducted a survey of staff at five correctional facilities in a rural mountain state. They found support for use of force was higher among younger staff, staff with the least or greatest number of years of service, and was also somewhat shaped by gender and military service. A recent survey collected from the Texas Department of Corrections found that younger, male officers, those who were dissatisfied with work, who had less supervisor support or family support, and who perceived coworkers as engaging in staff-inmate boundary violations were at higher risk of ignoring wrongful acts against incarcerated people (Worley et al., 2019).

Other research suggests officer characteristics are not that important in developing an officer's readiness to use force (see Griffin 1999, 2002). For example, a vignette study conducted in a jail system in a Southwestern state (Hogan et al., 2005) indicated male and female officers were similar in their definitions of the severity of an incident, their choice to use verbal communication as the first response, and their willingness to use or threaten to use force. Rather, some scholars argue aspects of a CO's job and the agency that they work for – such as role ambiguity, role conflict, job satisfaction, fear of crime, quality of supervisors, and custodial philosophy – are more important in developing their attitudes toward use of force (Griffin 1999,

2002; Worley et al., 2019).

### **The Current Study: Are Characteristics of Incarcerated People Related to Use of Force?**

Unlike the policing literature, which has focused extensively on citizen characteristics (for a review, see Bolger, 2015; Smith et al., 2017), only a couple of studies have examined how use of force in corrections may vary depending upon the characteristics of incarcerated persons. For example, the relationship between gender on use of force has been explored: Wolff et al. (2007) reported that staff-on-inmate victimization was higher among males than females, but Hogan and colleagues (2005) found that officers' hypothetical willingness to use force was higher when the vignette described an incident involving an incarcerated woman. More recently, McNeeley and Donley (2021) controlled for characteristics of incarcerated people when examining whether crisis intervention team (CIT) training reduced use of force by COs, finding the person's offense type and their length of incarceration were related to use of force.

Criminal justice theory suggests there may be racial disparities in CO use of force. Some policing scholars have framed their work on use of force within the focal concerns perspective (Johnson, 2005; Steffensmeier et al., 1998; Ulmer & Johnson, 2004). This theory explains that criminal justice actors base their decisions on three important factors: blameworthiness, dangerousness, and practical constraints or consequences. Because they usually have limited time in which to make decisions and may not possess all relevant data, they develop perceptual shorthands so they can use known information to fill in the gaps in their knowledge regarding those three factors. These perceptual shorthands can be influenced by stereotypical views regarding race and crime; for example, they may unconsciously consider non-White individuals more dangerous.

In line with the focal concerns perspective, Skolnick (1966) noted that the use of perceptual

shorthands were especially prevalent in policing, as police officers often had to make quick decisions without complete information about a person's dangerousness (see also Bell, 2018; Jones-Brown, 2007). Therefore, police officers developed a perceptual shorthand in which certain individuals – notably, young, black males – come to be seen as “symbolic assailants” who pose a threat to police and the community. Previous research has used the focal concerns and symbolic assailant perspectives to understand racial disparities in police decisions such as searches and use of force (Crow & Adrion, 2011; Higgins et al., 2011; Morgan et al., 2020), court decisions such as sentencing (Beckett & Sasson, 2000; Chiricos et al., 2004; Roberts, 1993), and decisions in corrections such as parole and segregation use (e.g., Huebner & Bynum, 2006; Logan et al., 2017).

While this theoretical framework suggests there may be racial disparities in CO use of force, McNeeley and Donley (2021) found no relationship between an incarcerated person's race and use of force. However, the authors noted the study was not ideal for examining between-person effects since it did not account for the clustering of incidents within individuals and called for more research on the use of force against those housed in correctional facilities. Additionally, their study did not examine how individual characteristics may have different relationships with different types of force.

Additionally, although the policing literature points to several situational risk factors for use of force – such as suspect aggression, mental health crises, and number of officers present (e.g., Bolger, 2015; Engel et al., 2000; Morabito et al., 2017; Rossler & Terrill, 2017) – little is known about how these and other situational characteristics shape the decision to use force among COs. Finally, little research has examined use of force in actual incidents – instead relying on COs' attitudes toward the use of force or hypothetical use of force in response to scenarios (for an exception, see McNeeley & Donley, 2021) – and much of the existing literature on CO use of force



has focused on either general aggressiveness or physical force, rather than the broader spectrum of force available to correctional officers.

To fill these gaps in the literature, the current study examines 500 incidents that took place within a maximum-security correctional facility in order to better understand the use of various types of force, including chemical irritant, restraints, cell extractions, and physical force. This study provides a major contribution to the literature by examining the effects of situational risk factors and characteristics of incarcerated people. In particular, the main focus of this study is to determine the extent to which there are racial disparities in COs' decisions to use force when controlling for situational characteristics. The analyses control for situational characteristics that have been shown to be related to police use of force, such as resistance and aggressive or hostile behavior (e.g., Bolger, 2015; Engel et al., 2000; Garner et al., 2002; Morgan et al., 2020). It is also expected that COs are likely to use force in situations that are most dangerous to them; therefore, many control variables were chosen based on their relationship with assaults against correctional staff. These include time of day, location, and behavior of incarcerated people and staff during the incident (see Jiang & Fisher-Giordano, 2002; Kratcoski, 1988; Light, 1990; McNeeley, in press; Sorensen et al., 2012).

Additionally, some prior studies on police use of force found that the importance of suspect race varied according to other circumstances (e.g., Garner et al., 2002; Paoline & Terrill, 2004, 2007; Schuck, 2004; Terrill et al., 2008). Based on this prior work, this study explores whether an incarcerated person's race moderates the effects of situational characteristics on use of force. However, it is unclear what type of interactive relationship to expect. On one hand, if force is used more often against non-Whites, it is possible that situational factors that indicate dangerousness may be more important in predicting force used against Whites. For example, Garner et al. (2002)

found that suspect race predicted use of force when the suspect's behavior was less hostile; when hostility was high, racial differences in use of force were not observed. In other words, hostility was more influential in predicting use of force among White suspects than among Black suspects. Similarly, when examining differences in sentencing, Steen et al. (2005) found that the disparity between White and Black defendants was more likely among those with less serious criminal histories. On the other hand, race may serve as an indicator of dangerousness (e.g., Brunson, 2007; Mears et al., 2017) that is especially salient during situations that officers find dangerous. In this way, race and situational characteristics that officers use as markers of dangerousness may compound to further increase the likelihood of force.

## **Research Methods**

### ***Data and Sample***

This study analyzes data originally collected for another study on 500 incidents that occurred at Minnesota Correctional Facility (MCF)-Oak Park Heights between October 2016 and March 2018 (see McNeeley & Donley, 2021). MCF-Oak Park Heights houses only males and is the only maximum-security prison operated by the MnDOC. This prison contains the Administrative Control Unit (ACU), where incarcerated people who pose a threat to others or to the orderly operation of a correctional facility are placed. It also houses the Mental Health Unit (MHU) designated to assist all incarcerated males with severe mental health needs and the Transitional Care Unit (TCU) that serves those who need intensive medical care.

An "incident" (the unit of analysis in this study) is defined by policy as a situation that could adversely impact facility or department operations or that necessitates administrative review. This can include a security breach, an escape or attempted escape, an injury or death of any person, a violation of facility rules, the loss or damage to property, a situation in which use of force

occurred, or non-routine conduct by incarcerated people or other individuals. This study examines outcomes that require the physical presence of both incarcerated people and staff; therefore, incidents were not included in the sample if they described situations in which there was no face-to-face interaction between at least one incarcerated person and at least one employee. For example, incident reports may be submitted after employees review security footage, receive written communication from incarcerated people, interact with visitors or other employees, or conduct searches with no incarcerated people present; however, such incidents were not included in the study.

Reports on approximately 4,800 incidents were written during the study period. Five hundred incidents that were eligible for the study were randomly selected. Due to the extensive data collection required for the study, it was not possible to analyze a larger sample. In particular, MnDOC does not have a database in which incident information is kept and does not have a database that contains information on use of force. Therefore, it was not possible to target incidents in which force was used. When multiple employees observed or were involved in an incident, each were required to write a separate report. All reports for an incident were reviewed in order to capture all available information. All incident reports were reviewed and coded by one of two coders. After jointly coding several incidents and finding consistency in coding, we divided the sample of incidents to review. The first author re-examined several of the other coder's incidents in order to further ensure consistency between coders.

The incidents in the sample involved 238 incarcerated people. The incarcerated people involved in these incidents were 45% Black, 40% White, 14% Native American, and 1% Asian. Approximately 9% were Hispanic or Latino. The average age was 36 years, with a range of 19 to 74 years. As of their earliest incident in the dataset, they had been incarcerated for an average of

62 months; the length of incarceration ranged from less than one month to 349 months. The majority (79%) were incarcerated for a new sentence, while the remaining 21% were in prison due to violating the conditions of their supervised release.

### ***Dependent Variables***

First, total use of force was a binary measure indicating whether or not staff used *any* of the following types of force against an incarcerated person: physical force (e.g., pressure point techniques, strikes, holds), chemical irritant, pinion restraints (e.g., a restraint board or chair),<sup>1</sup> or cell extractions (i.e., the forcible removal of an incarcerated person from his cell). Second, binary variables were created to represent each of those specific types of force; these are not mutually exclusive, as one incident may have included the use of multiple types of force. It is important to note that these variables capture any use of force and not excessive force; the appropriateness of force as a response to the incident was not measured. Some type of force was used in 15% of incidents. Staff used physical force in 8.8% of incidents, cell extractions in 8.6% of incidents, pinion restraints in 6.4% of incidents, and chemical irritant in 3.8% of incidents. Descriptive statistics for all variables are presented in Table 1.

### ***Characteristics of Incarcerated Persons***

Race is measured as a series of binary variables indicating whether the incarcerated person was White (reference group), Black, or another race.<sup>2</sup> Because COs may be aware of an incarcerated person's history during an interaction, influencing the decision to use force due to perceptions of dangerousness, offense type and prior discipline history are included as controls. Offense type is measured as a binary variable indicating whether the individual was incarcerated

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<sup>1</sup> This study did not examine mechanical restraints (e.g., handcuffs) because their use seems to be standard policy in many situations and is therefore less discretionary and less dependent on the incarcerated person's race than the other types of force examined here.

<sup>2</sup> The "other race" category includes Asian (n = 7), Native American (n = 44), and Hispanic (n = 30).

**Table 1. Descriptive Statistics**

Variable	Mean	SD	Range	N
<i>Incident Level</i>				
Use of force	0.19	0.393	0-1	500
Chemical	0.04	0.191	0-1	500
Pinion restraints	0.06	0.245	0-1	500
Cell extraction	0.09	0.281	0-1	500
Physical	0.09	0.284	0-1	500
<i>Shift</i>				
First Watch	0.13	0.334	0-1	500
Second Watch	0.50	0.501	0-1	500
Third Watch	0.37	0.483	0-1	500
<i>Location</i>				
Segregation	0.43	0.496	0-1	500
Cell	0.44	0.496	0-1	500
Other			0-1	500
Medical incident	0.37	0.483	0-1	500
Mental health symptoms	0.57	0.496	0-1	500
Aggressive behavior	0.18	0.388	0-1	500
Resisted restraints	0.06	0.241	0-1	500
Number of employees present	5.37	4.047	1-19	500
Average tenure of employees	7.95	5.616	0-30	500
Average age of employees	37.29	6.23	23-66	500
Any female staff present	0.62	0.486	0-1	500
Any minority staff present	0.59	0.592	0-1	500
<i>Inmate Level</i>				
<i>Race</i>				
White	0.40	0.49	0-1	238
Black	0.45	0.50	0-1	238
Other race	0.23	0.42	0-1	238
Person offense	0.74	0.44	0-1	238
Age	35.69	11.14	19-74	238
Prior discipline	37.55	50.92	0-567	238
Length of confinement	61.62	70.54	0-349	238

for a person offense. Prior discipline is a continuous variable measuring the number of convictions for rule violations as of the incarcerated person's earliest incident that appeared in the dataset. Two other continuous variables were measured as of the individual's earliest incident that appeared in the dataset: age in years and the length of confinement in months.

### ***Situational Characteristics***

First, time of day was measured in shifts, with three binary variables indicating whether the incident occurred during first watch (overnight, from 10:25pm to 06:44am), second watch

(6:45am to 2:34pm), or third watch (2:35pm to 10:24pm). First watch was used as the reference group. Second, location was measured with three binary variables indicating whether the incident occurred in segregation, the incarcerated person's cell, or another type of location (reference group).<sup>3</sup>

Third, medical incident was a binary variable indicating whether an incarcerated person experienced medical problems or received medical treatment during the incident. In order to reduce correlations between independent variables, this did not include medical problems or treatment that resulted from self-harm or violence during the incident. Fourth, mental health symptoms was a binary variable in which a score of 1 indicates that at least one employee described the incarcerated person as exhibiting any of the following symptoms (see Center for Health Policy, Planning and Research, 2007): agitated or irritable, anxiety or panic, confusion, delusions, depression or sadness, disoriented, embarrassed, hearing voices or command voices, hopelessness or crying, hyperactive, impulsive, insomnia, isolating, lack of eye contact or blank stares, lack of personal hygiene, not eating, pacing, paranoia, phobia or fear, recent loss, yelling or screaming, or engaged in self-harm or having thoughts about self-harm or suicide. Fifth, aggressive behavior was a binary variable indicating whether an incarcerated person engaged in any of the following behaviors: made threats, was verbally abusive (e.g., cursing, shouting, insults), assaulted or attempted to assault employees or others, or used or displayed a weapon. This variable captures aspects of demeanor, hostility, and resistant behavior that have been studied extensively in the police use of force literature (see Bolger, 2015; Engel et al., 2000; Garner et al., 2002; Morgan et al., 2020). Sixth was a binary variable indicating whether the individual resisted restraints. This

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<sup>3</sup> Other locations included living unit common areas (4%), canteen (2.4%), recreation/gym (2%), mental health (1%), medical (1%), education (1%), intake (1%), due process (0.4%), kitchen (0.2%), employee dining room (0.2%), or off-ground areas such as a hospital (1%).

includes resisting placement in pinion restraints as well as mechanical restraints, such as handcuffs.

Finally, there were five incident-level variables relating to the employees involved in the incident: the number of employees present, the average length of their employment (in years), their average age (in years), a binary variable measuring whether any female employees were present, and a binary variable measuring whether any non-White staff were present. There were a handful of employees with missing data for age ( $n = 12$ , or 3.9% of employees) or length of employment ( $n = 7$ , or 2.3% of employees); these were replaced with the mean before aggregating the variables to the incident level.

### ***Analytic Strategy***

The data were structured as incidents nested within incarcerated persons. In cases in which multiple incarcerated persons were involved in an incident,<sup>4</sup> the incident was duplicated and nested within both. However, there were few incidents nested within each individual: The number of incidents per individual ranged from 1 to 34. About 62% of individuals had only one incident in the dataset. Therefore, instead of hierarchical multilevel models, binary logistic regression with robust standard errors was used, specifically, the Huber-White sandwich (see Rogers, 1993; Wooldridge, 2002). Checks for multicollinearity were conducted and no problems were found: all but four variables had tolerance values above 0.4 (see Allison, 1999); the variables representing the shift during which the incident occurred and the location of the incident all had tolerance values above 0.3 (see Hair et al., 2010).

Because of the small sample size, there are few events, or cases with scores of 1 on the dependent variable. When examining total use of force, there were enough events to include all independent variables. However, when examining specific types of force, it is important to choose

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<sup>4</sup> Most incidents (95%) only involved one incarcerated person; the remaining 5% of cases involved between two and nine individuals.

a smaller set of variables for the models (see Penduzzi et al., 1996; Vittinghoff & McCulloch, 2007). To account for this, backward elimination stepwise regression was used to select the best-fitting models that included the variables representing the incarcerated person's race.

To explore whether an incarcerated person's race moderated the effects of situational characteristics, multiplicative interaction terms were estimated. Each interaction term was entered into a separate model. Interactions were not estimated for the models predicting specific types of force because of the small number of events.

## **Results**

### ***Bivariate Results***

Bivariate relationships between race and the use of force measures are provided in Table 2. When examining specific types of force, racial differences were found in the use of pinion restraints, cell extractions, and physical force. Pinion restraints were used less often in incidents involving Black people (3%), compared to 10% of incidents involving White people and 9% of incidents involving those who belonged to other racial groups. On the other hand, cell extractions were more likely to be used against Black people; cell extractions were used in 14% of incidents involving Black people, compared to 4% of incidents involving White people and 3% of incidents involving members of other races. Similarly, physical force was less likely to be used against White people (2% of incidents) than against Black people (14%) or those who belonged to other minority groups (7%). There were no significant racial differences in the use of chemical irritant or in the measure of total use of force.



**Table 2. Bivariate Relationship Between Use of Force and Race**

Variable	White	Black	Other Race
Any force	27 (16%)	54 (22%)	15 (19%)
No force	145 (84%)	194 (78%)	66 (82%)
$X^2 = 2.447, p = .294$			
Chemical irritant	5 (3%)	10 (4%)	5 (6%)
No chemical irritant	167 (97%)	238 (96%)	76 (94%)
$X^2 = 1.535, p = .464$			
Pinion restraints	17 (10%)	8 (3%)	7 (9%)
No pinion restraints	155 (90%)	239 (97%)	74 (91%)
$X^2 = 8.285, p = .016^*$			
Cell extraction	6 (4%)	35 (14%)	2 (3%)
No cell extraction	166 (96%)	212 (86%)	79 (98%)
$X^2 = 19.340, p < .001^{***}$			
Physical force	3 (2%)	34 (14%)	6 (7%)
No physical force	168 (98%)	213 (86%)	75 (93%)
$X^2 = 18.691, p < .001^{***}$			

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ , †  $p < .10$

### **Main Effects**

The results of the binary logistic regression models predicting use of force are presented in Table 3. No significant difference in total use of force was found between White people and Black people ( $b = 0.31, p > .05$ ) or between White people and those who fall into other racial categories ( $b = 0.75, p > .05$ ). However, some racial disparities were found when examining specific types of force. Pinion restraints were 80% more likely to be used against White people than against Black people ( $b = -1.61$ , odds ratio = 0.200,  $p < .01$ ). On the other hand, physical force was about 7.7 times more likely to be used against Black people ( $b = 2.05$ , odds ratio = 7.73,  $p < .05$ ) and about 8.4 times more likely to be used against those who belonged to other minority racial groups ( $b = 2.13$ , odds ratio = 8.45,  $p < .01$ ), after controlling for relevant situational factors. In regards to other characteristics of incarcerated persons, total use of force was more likely to be used against those incarcerated for person offenses ( $b = 0.96, p < .05$ ); this was also observed when examining

**Table 3. Binary Logistic Regression Models Predicting Use of Force**

Variable	<i>Any force</i>	<i>Chemical irritant</i>	<i>Pinion restraints</i>	<i>Cell extraction</i>	<i>Physical force</i>
<i>Incident Level</i>					
Second Watch	1.41 (0.60)*	13.99 (0.73)***	1.00 (0.40)*	1.86 (0.64)**	---
Third Watch	0.66 (0.51)	14.44 (0.59)***	---	---	---
Segregation	-1.19 (0.46)*	-2.20 (0.59)***	0.99 (0.40)*	---	-3.33 (0.95)***
Cell	-0.25 (0.46)	-2.88 (0.93)**	---	2.01 (0.88)*	---
Medical incident	0.47 (0.42)	---	---	1.32 (0.60)*	1.39 (0.50)**
Mental health symptoms	0.62 (0.45)	---	1.14 (0.54)*	1.95 (0.76)*	1.18 (0.49)*
Aggressive behavior	-0.17 (0.44)	---	---	---	---
Resisted restraints	1.50 (0.63)*	---	1.14 (0.68)†	1.97 (0.71)**	2.79 (0.74)***
Number of employees present	0.32 (0.05)***	0.39 (0.06)***	0.18 (0.04)***	---	0.26 (0.05)***
Average tenure of employees	0.06 (0.05)	---	---	---	---
Average age of employees	-0.05 (0.05)	---	-0.12 (0.04)**	---	---
Any female staff present	-0.28 (0.33)	-1.13 (0.67)†	---	---	-0.68 (0.31)*
Any minority staff present	0.79 (0.33)*	---	---	0.85 (0.38)*	---
<i>Inmate Level</i>					
Black	0.31 (0.57)	0.31 (0.70)	-1.61 (0.59)**	1.33 (0.84)	2.05 (0.83)*
Other Race	0.75 (0.50)	1.03 (0.68)	0.02 (0.50)	-0.49 (1.21)	2.13 (0.77)**
Person offense	0.96 (0.44)*	---	---	---	1.32 (0.64)*
Age	0.001 (0.02)	---	---	---	---
Prior discipline	0.002 (0.003)	---	---	---	---
Length of stay	-0.01 (0.01)	-0.01 (0.01)*	---	---	-0.01 (0.01)†
Constant	-4.53 (2.45)†	-17.68 (0.93)***	-1.06 (1.56)	-8.82 (1.77)***	-7.19 (1.05)***
X <sup>2</sup>	173.222***	1118.57***	62.69***	59.40***	61.14***
Pseudo R <sup>2</sup>	0.3954	0.4068	0.2367	0.4303	0.4817

\*\*\* p &lt; .001, \*\* p &lt; .01, \* p &lt; .01, † p &lt; .10

physical force ( $b = 1.32, p < .05$ ). Chemical irritant was less likely to be used against those with longer prison stays ( $b = -0.01, p < .05$ ), as was physical force ( $b = -0.01, p < .10$ ).

Several situational characteristics were related to use of force. First, total use of force was more likely during Second Watch than First Watch ( $b = 1.41, p < .05$ ); this was also the case when separately examining chemical irritant ( $b = 13.99, p < .001$ ), pinion restraints ( $b = 1.00, p < .05$ ), and cell extractions ( $b = 1.86, p < .01$ ), but not physical force. Second, chemical irritant was more likely to be used during Third Watch than First Watch ( $b = 14.44, p < .001$ ). Third, total use of force ( $b = -1.19, p < .05$ ), as well as chemical irritant ( $b = -2.20, p < .001$ ) and physical force ( $b = -3.33, p < .001$ ), was less likely during incidents that occurred in segregation. However, pinion restraints were more likely to be used in segregation ( $b = 0.99, p < .05$ ). Fourth, incidents that occurred at an incarcerated person's cell were less likely to result in chemical irritant ( $b = -2.88, p < .01$ ) but more likely to result in cell extraction ( $b = 2.01, p < .05$ ).

The variables representing behavior or symptoms were also relevant for understanding use of force. First, total use of force was more likely when individuals resisted restraints ( $b = 1.50, p < .05$ ), as was the use of cell extractions ( $b = 1.97, p < .01$ ), physical force ( $b = 2.79, p < .001$ ), and pinion restraints ( $b = 1.14, p < .10$ ). Second, medical incidents were more likely to result in cell extractions ( $b = 1.32, p < .05$ ) and physical force ( $b = 1.39, p < .01$ ). Third, incarcerated persons experiencing mental health symptoms were more likely to be held in pinion restraints ( $b = 1.14, p < .05$ ), be extracted from their cells ( $b = 1.95, p < .05$ ), or experience physical force ( $b = 1.18, p < .05$ ).

The number of employees present during an incident was positively related to total use of force ( $b = 0.32, p < .001$ ), chemical irritant ( $b = 0.39, p < .001$ ), pinion restraints ( $b = 0.18, p < .001$ ), and physical force ( $b = 0.26, p < .001$ ). In addition, some characteristics of the employees

present were related to use of force. The presence of minority staff was positively related to total use of force ( $b = 0.79, p < .05$ ) and cell extractions ( $b = 0.85, p < .05$ ), while the presence of female staff was negatively related to physical force ( $b = -0.68, p < .05$ ) and chemical irritant ( $b = -1.13, p < .10$ ). Finally, the average age of the employees present was negatively related to the use of pinion restraints ( $b = -0.12, p < .01$ ).

### ***Interaction Effects***

Next, multiplicative interaction effects between race and the thirteen situational characteristics were each estimated in separate models predicting total use of force. These results are displayed in Table 4 and illustrated in Figure 1. The results show that several situational factors have different relationships with use of force based on the incarcerated person's race. First, medical incidents involving Black people were more likely to involve use of force than were medical incidents involving White people ( $b = 1.71, p < .05$ ). In other words, the likelihood that medical issues would increase use of force was stronger when the interaction involved Black incarcerated people. This mirrors patterns in the general population, where Black patients with mental health problems may be seen as more dangerous and may be more likely to be subjected to violence-reduction methods such as restraints (e.g., Bond et al., 1988).

Second, race and aggressive behavior may have combined to more strongly influence the use of force; aggressive behavior by non-Black minorities was marginally more likely to result in use of force than similar behavior by White inmates ( $b = 1.72, p < .10$ ). The positive effect of aggressive behavior (which includes verbal aggression) on use of force was stronger among non-Black people of color than among Whites. This finding contradicts Garner et al. (2002), who found less racial disparity at high levels of hostility, while these results suggest more racial disparity at high levels of aggressive or hostile behavior. Third, the effects of the employees who were present

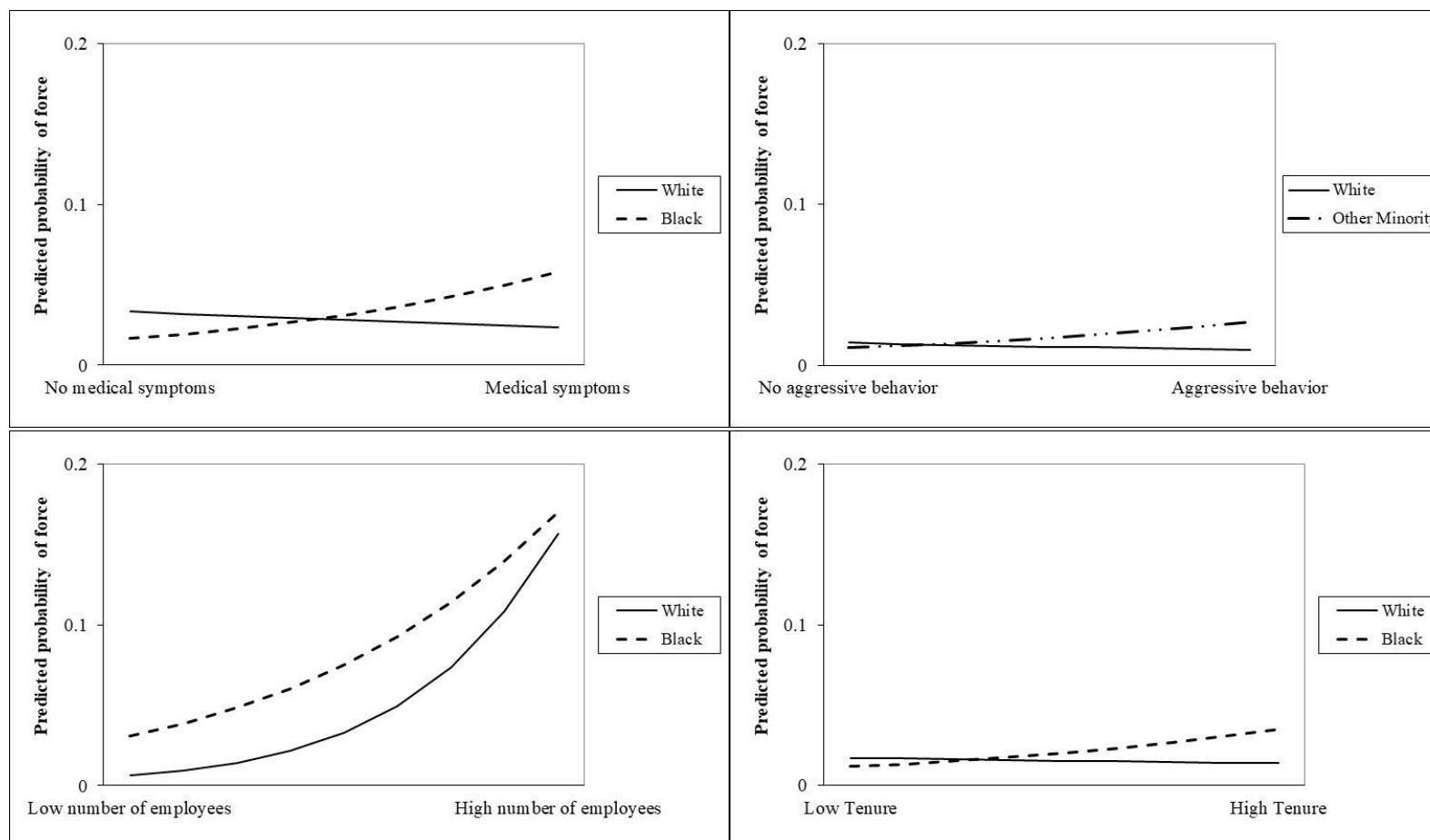
**Table 4. Interaction Effects on Total Use of Force**

Interaction	<i>Intercept</i>	<i>Race variable</i>	<i>Situational characteristic</i>	<i>Interaction</i>
Black x Medical incident	-3.41 (2.31)	-0.53 (0.53)	-0.36 (0.47)	1.71 (0.72)*
Black x Mental health symptoms	-4.27 (2.26)†	0.02 (0.67)	0.43 (0.59)	0.39 (0.80)
Black x Aggressive behavior	-4.62 (2.49)†	0.62 (0.62)	1.62 (0.66)*	-1.31 (0.80)
Black x Resisted restraints	-4.63 (2.51)†	0.46 (0.58)	3.61 (1.80)*	-2.75 (1.94)
Black x Number of employees present	-5.64 (2.70)*	1.89 (0.85)*	0.42 (0.07)***	-0.19 (0.07)*
Black x Average tenure of employees	-4.00 (2.47)	-0.67 (0.66)	-0.02 (0.07)	0.12 (0.06)†
Black x Average age of employees	-3.42 (2.63)	-1.76 (2.27)	-0.08 (0.06)	0.06 (0.06)
Black x Any female staff present	-4.67 (2.47)†	0.59 (0.78)	-0.08 (0.48)	-0.37 (0.62)
Black x Any minority staff present	-4.30 (2.56)†	-0.08 (1.02)	0.51 (0.58)	0.47 (0.73)
Other race x Medical incident	-4.54 (2.48)†	1.10 (0.58)†	0.63 (0.46)	-0.91 (0.76)
Other race x Mental health symptoms	-4.91 (2.53)†	1.28 (0.69)†	0.84 (0.52)	-1.03 (0.81)
Other race x Aggressive behavior	-4.36 (2.43)†	0.09 (0.52)	-0.50 (0.52)	1.72 (0.88)†
Other race x Resisted restraints <sup>a</sup>	---	---	---	---
Other race x Number of employees present	-4.30 (2.42)†	-0.15 (1.02)	0.30 (0.05)***	0.11 (0.11)
Other race x Average tenure of employees	-4.46 (2.48)†	1.33 (0.91)	0.07 (0.05)	-0.07 (0.09)
Other race x Average age of employees	-4.64 (2.48)†	1.52 (3.37)	-0.05 (0.05)	-0.02 (0.09)
Other race x Any female staff present	-4.28 (2.42)†	0.23 (0.81)	-0.41 (0.36)	0.73 (0.88)
Other race x Any minority staff present	-4.56 (2.38)†	1.00 (0.97)	0.84 (0.34)*	-0.30 (0.99)

\*\*\* p < .001, \*\* p < .01, \* p < .01, † p < .10

<sup>a</sup> This interaction variable was omitted because it predicted the outcome perfectly.

**Figure 1: Effects of Situational Characteristics on Use of Force, by Inmate Race**



varied by race. The positive relationship between the number of employees and use of force was weaker when the incident involved a Black incarcerated person ( $b = -0.19, p < .05$ ). In other words, the presence of many employees was less likely to increase the odds of using force against Black people than it was against White people. Fourth, the negative effect of the average tenure of the employees who were present was weaker during incidents involving Black people ( $b = 0.12, p < .10$ ). This means that the protective effect of employee tenure against the use of force was stronger when interacting with White people than with Black people.

## **Discussion**

### ***Racial Disparities in Use of Force in Corrections***

This study adds to the limited literature on use of force in correctional agencies by testing for racial disparities in use of force while controlling for other individual and situational characteristics. While the sample size here was small, making the examination of specific types of force difficult, the results highlight the importance of examining specific types of force in addition to a total measure of force. Total use of force did not vary by race, but disparities emerged when examining specific types of force. Incarcerated people of color were 7-8 times more likely to experience physical force than Whites, while Whites were 80% more likely to be placed in pinion restraints. The findings are in line with prior research showing racial disparity in many aspects of prison life, such as rule enforcement, segregation use, victimization, and access to treatment (e.g., Bonner et al., 2017; Logan et al., 2017; Nowotny, 2015; Wolff et al., 2008; Wooldredge & Steiner, 2012).

Criminal justice theories such as focal concerns (Johnson, 2005; Steffensmeier et al., 1998; Ulmer & Johnson, 2004) and the symbolic assailant theory (Skolnick, 1966) posit that race is used a perceptual shorthand when criminal justice decision makers are short on time and information.

The racial disparities found here suggest that this may also be the case for COs. However, there are important differences between the police and correctional settings that influence how perceptual shorthands may develop. To be sure, some COs float between different units and shifts interact with incarcerated people who they do not know; they may make quick decisions using these cognitive shortcuts as described by the focal concerns perspective. However, many interactions between COs and incarcerated people should come with much more familiarity, as the incarcerated person's history, their recent behavior, and their personality are often, to some degree, already known by staff. Therefore, it is possible that racial disparities in use of force are shaped by additional, different processes than those suggested by the focal concerns and symbolic assailant perspectives. Future research should examine the mechanisms through which racial disparities might emerge in CO use of force, which could have implications for understanding criminal justice decision-making more broadly. A particular avenue for future research is to incorporate the extent to which the incarcerated person was familiar to the officer, perhaps by including aspects of the officer's job detail.

Importantly, racial disparity in CO use of force may further undermine equity in the prison system. For example, it may contribute to racial inequity in health outcomes. Studies have shown that experiencing use of force by police has long-lasting effects on mental health issues such as manic and depressive symptoms (Meade et al., 2017), and that perceived discrimination that occurs in other forms leads to physical and mental health issues (Krieger, 2014). These effects are likely stronger when force is used in a correctional setting, as incarcerated people continue to spend time in that setting and potentially with the COs who used force against them. As another example, scholars have linked interpersonal experiences of racial discrimination to future offending (e.g., Burt et al., 2012). Thus, racial disparities in use of force in prisons could further exacerbate racial



disparities in subsequent criminal justice outcomes that are often intertwined, such as institutional misconduct, participation in correctional programming, successful reentry to the community, and recidivism.

In addition to finding a racial disparity in force, the study found that race significantly moderated the relationships between several situational characteristics – including those measuring the incarcerated person’s behavior – and total use of force. For example, the increase in force in medical situations or situations in which incarcerated people behaved aggressively was stronger among people of color than among Whites. These significant interactions suggest racial disparities in use of force may occur because officers perceive the dangerousness of a situation differently based on the incarcerated person’s race. In particular, correctional staff may consider Whites to be more dangerous to themselves (necessitating placement in pinion restraints) while implicitly considering people of color more dangerous to others. The use of the perceptual shorthand in which a person of color is assumed to be dangerous has important implications beyond use of force; for example, racial bias during medical incidents can lead to misdiagnoses for people of color, especially of mental illnesses (Gara et al., 2019).

More research is needed to fully understand how race might shape the way that COs interpret dangerousness during interactions with incarcerated people. Still, these findings suggest correctional agencies would benefit from adopting strategies that target racial biases among staff, including those biases that may unconsciously shape decision-making meant to be based on other factors. For example, many have argued for police officers to undergo implicit bias training, which educates officers on the existence of unconscious biases and teaches strategies for reducing their effects. However, although many police departments have adopted this type of training, there is limited evidence of its effectiveness in reducing racial disparities in use of force (Engel, McManus,

& Isaza, 2020; Mitchell & James, 2018). Still, this is an avenue to consider for correctional staff training.

While this study did not examine whether the amount of force used in this correctional setting was extensive, given the racial disparities in force found here, reducing use of force in correctional facilities would potentially address racial and ethnic inequalities in prison experiences while providing a benefit to all incarcerated people. Therefore, correctional agencies should prioritize an overall reduction in use of force. Within the field of policing, several training programs have been developed with the goal of reducing use of force. First is de-escalation training, which emphasizes slowing down, considering all options, and using communication to defuse potentially violent situations. A recent review found that de-escalation training did not have adverse outcomes and appeared to be moderately successful (Engel, McManus, & Harold, 2020). Second, it is theorized that use of force occurs due to officers' goal of exerting authority during social interactions with civilians. Therefore, social interaction training programs – in which officers learn about turning points during interactions where conflict can escalate or where de-escalation can occur – have been developed, with positive results (Wolfe et al., 2020). Third, procedural justice training encourages officers to show respect, neutrality, and transparency and allow civilians to explain their side of things, reducing use of force and complaints against officers (Nagin & Telep, 2020; Owens et al., 2018; Wood et al., 2020). Correctional agencies should explore whether any or all of these programs may be beneficial. When implementing such programs, evaluations must be conducted to determine their effectiveness in a correctional setting.

#### ***Other Factors Related to Use of Force in Corrections***

The study also contributes to the criminal justice literature by revealing other patterns in use of force within the correctional setting. First, use of force was more likely during medical

incidents; these incidents may be perceived as particularly dangerous given the need for medical staff (who are not trained in defensive strategies) to be in close proximity with incarcerated people. Second, consistent with the policing literature (Morabito et al., 2017; Rossler & Terrill, 2017), COs were more likely to use force when mental health symptoms were exhibited. Third, force was more likely to occur when individuals resisted restraints, as force is often used to gain compliance. Additionally, because assaults against staff often happen when incarcerated people are attempting to avoid being restrained (McNeeley, 2021), these actions are likely seen as dangerous by COs and thus additional force may be applied. Fourth, in regards to location, it is possible that the physical barriers between staff and incarcerated people found in segregation units and living units make incidents less risky for staff – for example, previous research found that inmate-on-staff assaults were less likely to occur in similar locations (McNeeley, in press). Corrections administrators should consider whether changes in staffing to better cover shifts and work areas in which force is more likely to be used (including those with high levels of violence) may increase staff safety and therefore reduce the need to use force during critical incidents.

In addition, a number of employee characteristics were related to use of force. First, use of force – especially cell extractions – was higher when non-White employees were present. Recent studies on police suggest White officers are more likely to use force or otherwise behave in a coercive manner, especially toward minority suspects (Hoekstra & Sloan, 2020; Paoline et al., 2018). Second, physical force and chemical irritant were less likely to be used when female employees were present, contrary to previous research on COs' attitudes about using force (Jenne & Kersting, 1996; Tewksbury & Collins, 2006). The policing literature suggests female officers may be more skilled at verbally de-escalating volatile situations, therefore relying less on force than male officers (e.g., Bolger, 2015; Rabe-Hemp, 2008). Third, pinion restraints were less likely

when the correctional staff responding to an incident were older. Older employees may have better communication skills, making them more likely to convince individuals in crisis to avoid hurting themselves or others. In contrast, employees' level of experience was not a significant predictor of use of force. This is similar to the policing literature; individual studies show mixed results and a meta-analysis found no relationship between experience and use of force (Bolger, 2015).

Finally, use of force was more likely when more employees responded to an incident. This is likely because backup is requested in difficult situations in which force may be necessary. Still, it is possible in some cases that the presence of many officers contributes to a sense of chaos – especially if the employees are not all acting in concert. A chaotic scene may escalate rather than de-escalate a situation, which could in turn increase the need to use force. For example, studies show police officers' self-defense skills are lower during high-anxiety scenarios (Renden et al., 2015), which can increase their likelihood of relying on more severe types of force, such as batons, chemical irritant, or Tasers (Torres, 2020). This points to a need for correctional staff training to emphasize verbal communication skills, de-escalation techniques, and strategies for remaining calm in high-anxiety scenarios, as well as how to best work as a team during various types of critical incidents.

### ***Limitations and Suggestions for Future Research***

As with all research, there are limitations of the study that limit the interpretation of the findings. First, because the sample is small and there were few incidents within each incarcerated person, it was not appropriate to conduct multilevel analyses. Therefore, it is possible that the analyses (single-level models using robust standard errors) do not precisely estimate the person-level effects. Relatedly, the small sample size also results in small cell sizes for each type of force and each racial group, resulting in lower-than-ideal statistical power. This was handled using

trimmed models in which some independent variables were not included in all analyses; therefore, it is possible that the racial differences in use of force has been somewhat overestimated. Only a small sample could be used due to the extensive data collection required; therefore, it is recommended that correctional agencies establish procedures for data collection on critical incidents. This would allow for large-scale examinations of use of force and other important outcomes, as well as better day-to-day management of facilities.

A second major limitation of the study is the focus on a single prison, especially since prior research suggests organizational characteristics may impact use of force (Griffin 1999, 2002; Worley et al., 2019). It is possible that these results may not be generalizable to incidents that take place in other facilities, especially those with lower security levels. In particular, prior research suggests that use of force may vary by an incarcerated person's gender (Alpert & MacDonald, 2001; Hogan et al., 2005; Wolff et al., 2007), but this relationship could not be explored in the current study due to the focus on an all-male facility. Future research on CO use of force should include information on incidents that take place in women's prisons. Third, officer education is an important predictor of police use of force (e.g., Bolger, 2015). Unfortunately, correctional employees' education level was not available as a control variable in this study. Fourth, some control variables may be correlated with race in ways that affect the analyses. For example, prior discipline may serve as a proxy for race if there were substantial racial differences in rule enforcement (Omori & Peterson, 2020), and COs' perceptions of aggressive behavior may be influenced by race (see Steen et al., 2005). Therefore, the results presented here— especially those for the total use of force measure – should be viewed with caution. Future research should explore how these variables may mediate or moderate the relationships between race and use of force in a correctional setting.

Finally, the data analyzed here came from incident reports written by correctional employees. It is possible that some instances of use of force may not have been documented properly. For example, officers could have sometimes been dishonest in describing their motivations for using force (i.e., dishonest in describing the incarcerated person's behavior), as they have an interest in writing reports that justify their actions. Additionally, there could be unconscious bias that affects the way officers write reports and document the behavior of incarcerated people. Even assuming no dishonesty on the part of employees, the incident report is simply an open-ended narrative, resulting in some reports that were unclear or vague. Therefore, it is possible that the measurement of some variables may not be accurate in all incidents. It is recommended that correctional staff receive training on writing clear and succinct incident reports.

Further, while it is likely that many critical incidents in the facility were videoed by staff or captured by security cameras, we were unfortunately not able to examine video as part of the data collection for this study. Crucially, future research on use of force in corrections must collect data on actual use of force rather than solely relying on officers' attitudes or hypothetical responses to scenarios. When possible, scholars should collect data from multiple sources – such as incident reports provided by staff, video, survey data from incarcerated people, or administrative data on complaints about officers – as a method of triangulation to fully capture all incidents of use of force.

## ***Conclusion***

Despite these limitations, this study provides important insights regarding the use of force in correctional facilities. The results show racial disparities in use of force in this setting and suggest implicit racial biases might influence the way COs interpret situational cues such as an incarcerated person's behavior. While more research is needed, these findings support the focal

concerns and symbolic assailant perspectives (Johnson, 2005; Skolnick, 1966; Steffensmeier et al., 1998; Ulmer & Johnson, 2004) as well as prior research showing racial disparities in various outcomes relevant to institutional and community corrections (e.g., Bonner et al., 2017; Logan et al., 2017; Nowotny, 2015; Wolff et al., 2008; Wooldredge & Steiner, 2012). The racial disparity in use of force found here could contribute to racial disparities in other outcomes such as institutional misconduct and recidivism and could exacerbate problematic racial inequity in areas such as healthcare and reentry.

Training programs focusing on implicit bias, de-escalation, procedural justice, and social interactions – which have shown promise in addressing police use of force – could be useful in reducing racial disparities in force if adapted to a correctional setting. This study and the broader literature suggest some recommendations for implementing these programs most effectively. First, recent research shows CIT training (which educates officers about mental health issues and provides de-escalation strategies to use with those in mental health crisis) did not reduce use of force within a correctional facility (McNeeley & Donley, 2021); therefore, it is recommended that training programs explicitly address how the strategies learned can be used to replace force as a means of gaining compliance. Second, use of force within correctional facilities is sometimes planned and approved by higher-ranking officers, rather than always being a split-second decision by officers. Therefore, it is recommended that these strategies be widespread; for example, trainings should not only be administered to lower-ranking COs. Third, given the limited evidence regarding the effectiveness of these programs, it is vital for correctional agencies using these trainings to include an evaluation component so that best practices in reducing disparities in use of force can be developed.

Finally, there may be concerns that strategies perceived as attempts to reduce or limit force

within correctional facilities will be too dangerous for correctional staff. However, prior research showed that the use of methods such as physical force and chemical irritant actually increased the likelihood of inmate-on-staff assaults (McNeeley, in press). Therefore, policies and training that aim to reduce use of force may not only benefit incarcerated people – they may also improve safety for correctional staff. In addition, use of force is an aspect of correctional work that may contribute to high rates of burnout and work stress among COs (Cullen et al., 1985). Accordingly, reducing use of force in a way that maintains order and safety may reduce burnout and work stress, making it easier to recruit and retain qualified employees.

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